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WASHINGTON, D.C. 20006-4103

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150 NORTH MICHIGAN AVENUE
CHICAGO, ILLINOIS 60601-7567
312-555-1000

PARK AVENUE TOWER
85 EAST 85TH STREET
NEW YORK, NEW YORK 10022-3219
212-421-5555

500 HOWARD AVENUE
SOMERSET, NEW JERSEY 08875-8739
908-543-2700

RAYMOND J. KIMBALL

May 4, 1995

BY HAND

Mr. William Caton
Acting Secretary
Federal Communications Commission
1919 M Street, N.W.
Washington, D.C. 20554

MAY 4 1995

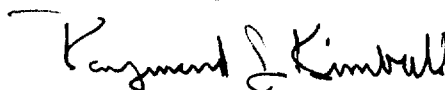
Re: Ex Parte Notice, CC Docket No. 92-297

Dear Mr. Caton:

In accordance with Section 1.1200 et seq. of the Commission's rules, this is to advise the Commission that on May 5, 1995, Rene Martinez and Daniel Howard of GeoWave, Inc. Newfield, N.Y. and Raymond J. Kimball, Esq. met with Thomas S. Tycz, Chief of the Satellite & Radio Communication Division, International Bureau, Donna Bethea, International Bureau, Gregory Rosston, Office of Plans and Policy and Amy C. Lesch, Industry Analyst, to discuss GeoWave's proposal for spectrum sharing between satellite and terrestrial communications services using temporal and spatial synchronization. The attachments to this letter were used in that discussion.

An original and three copies of this letter, with attachments, was filed with the Commission as of the date hereof, and a copy delivered to each of the above-named Commission personnel.

Sincerely,


Raymond J. Kimball

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List A B C D E

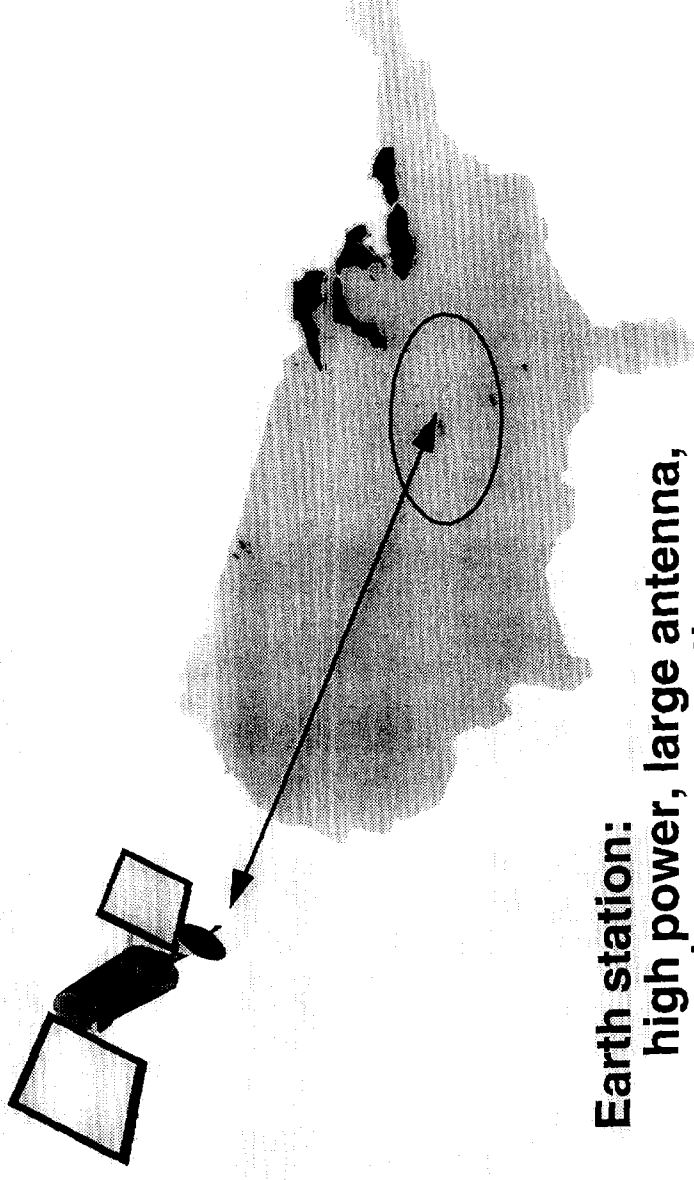
GeoWave

**GeoWave Corporation
29 Drake Rd.
Newfield NY 14867**

Outline

- 3 • **SINC - synchronized interservice
co-frequency sharing**
- 9 • **Applicability and feasibility**
- 13 • **Codifying and quantifying**
- 16 • **GeoWave's digital LMDs system**
- 19 • **GeoWave and its deployment plan**

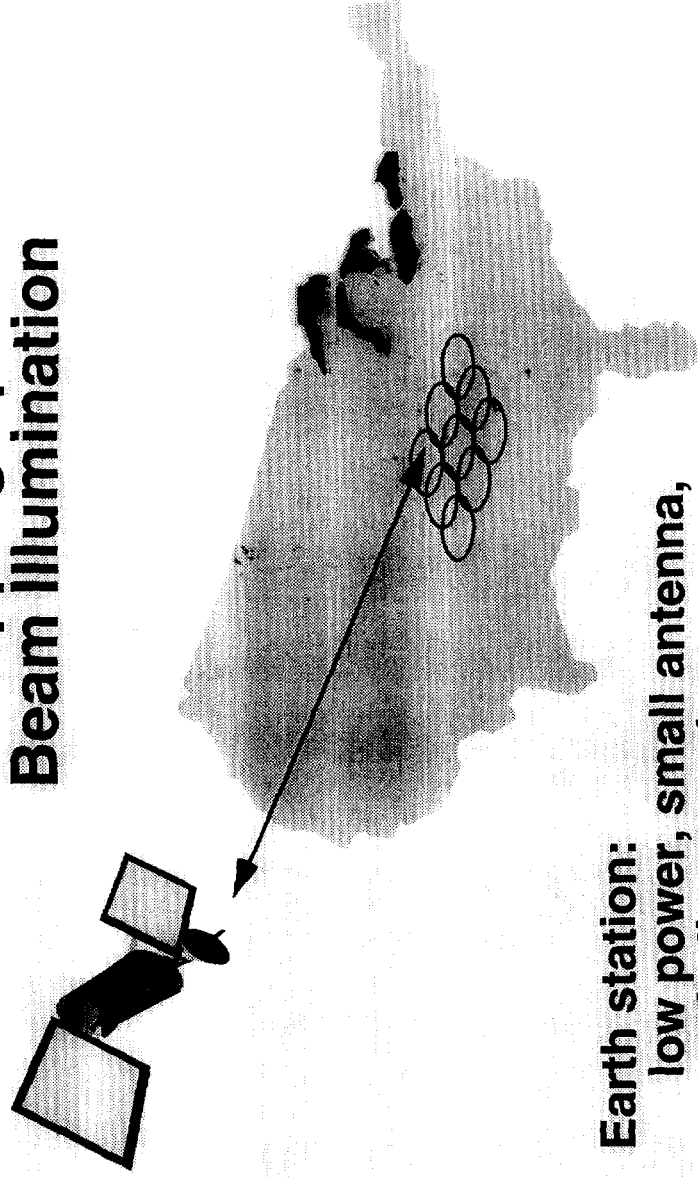
Wide Beam Illumination



Earth station:
high power, large antenna,
continuous operation

Low density of earth stations

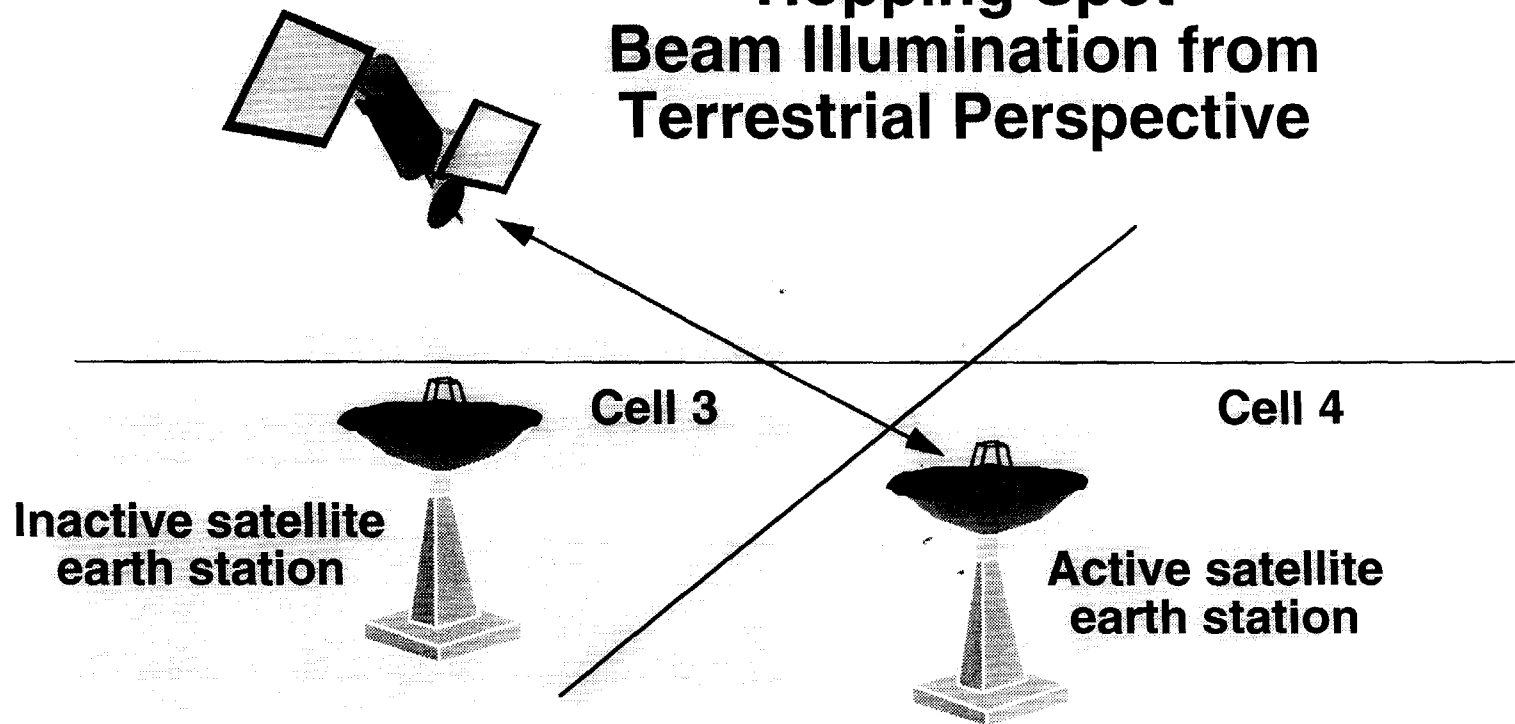
Hopping Spot Beam Illumination



**Earth station:
low power, small antenna,
periodic operation**

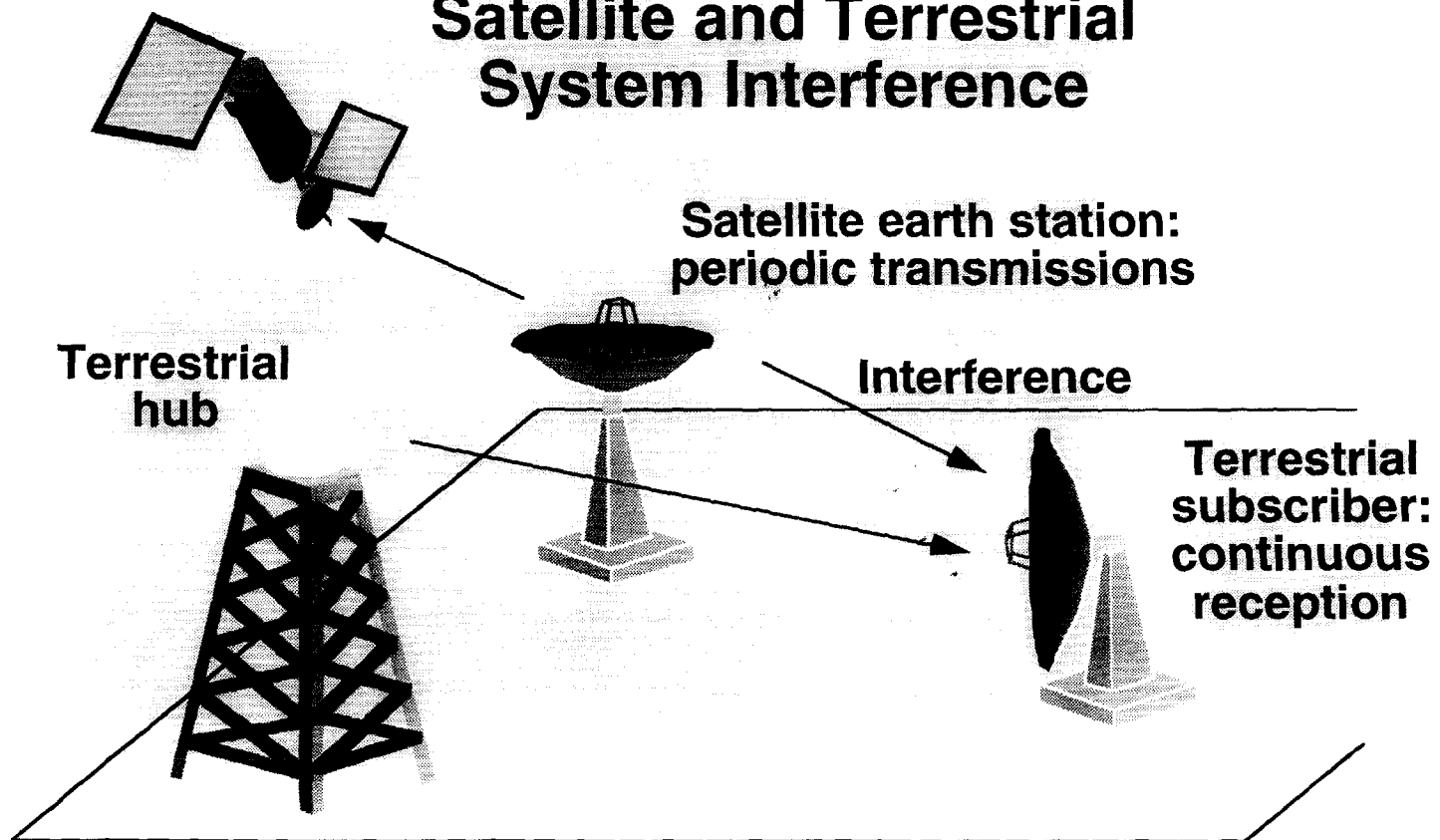
**High density of earth stations;
ubiquitous deployment**

Hopping Spot Beam Illumination from Terrestrial Perspective

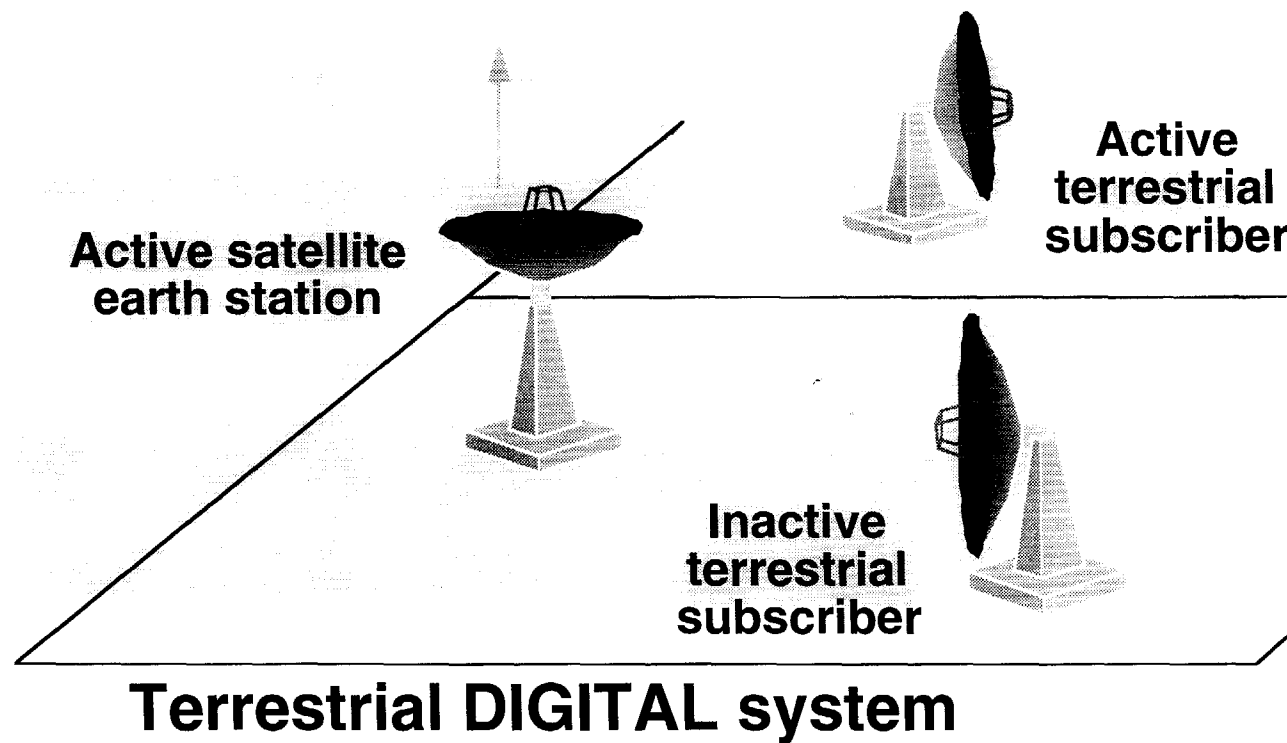


On earth's surface:
time division multiple access (TDMA)
and space division multiple access
(SDMA) of earth stations

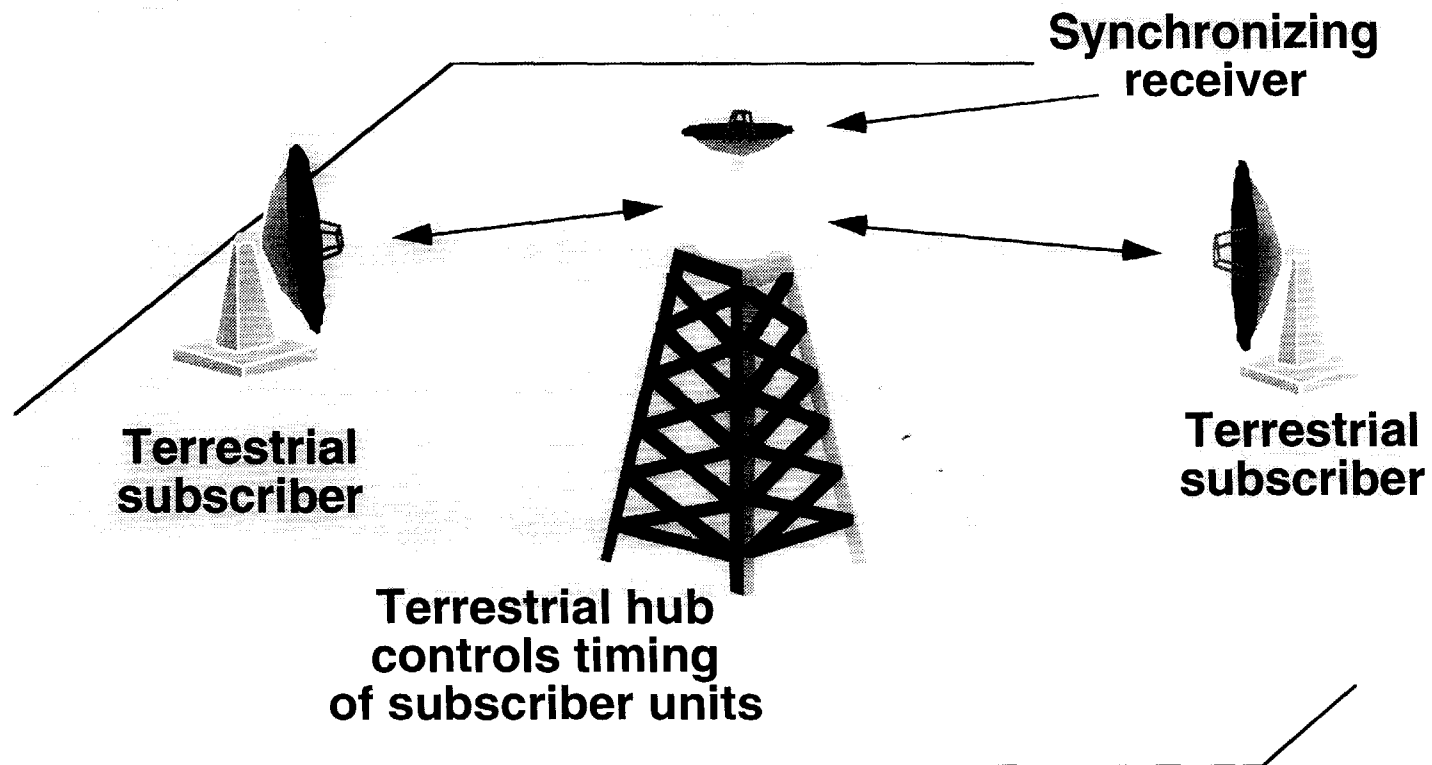
Satellite and Terrestrial System Interference



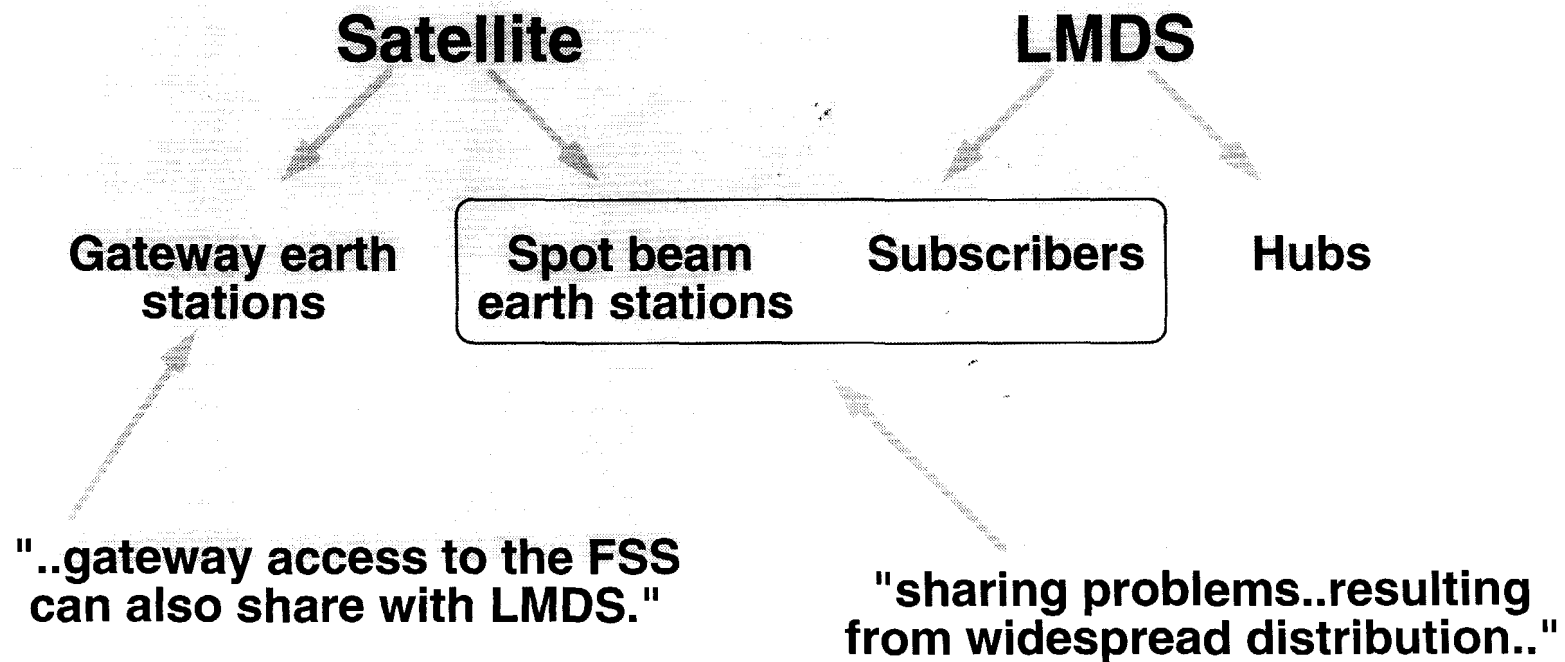
Spectrum Sharing by Temporal and Spatial Synchronization



Digital LMDS System



Spectrum Conflict



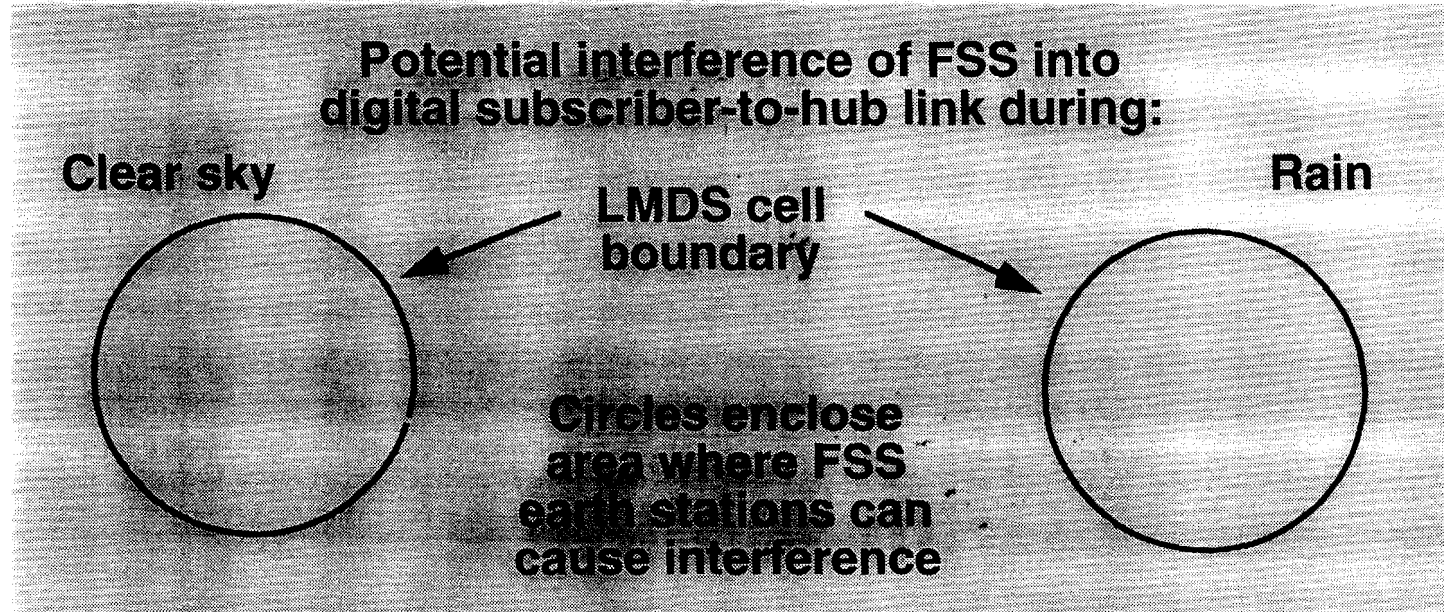
Time Sharing

"coordinated time sharing...could provide simultaneous use by FSS and LMDS"

"Digital time sharing must overcome the difficulty of synchronizing transmissions from highly random locations"

Synchronized time sharing is a non-mitigated solution for hopping spot beam systems

Applicability



SINC eliminates intracellular interference, so SINC:

- eliminates HSB FSS interference into digital subscriber-to-hub links
- greatly reduces HSB FSS interference into digital hub-to-subscriber links by a distance factor of 40.

Feasibility

- **LEO GPS delivers sub-microsecond timing accuracy, x1000 more accurate necessary for SINC**
- **TDMA is a handheld technology deployed in major metropolitan areas.**
- **Inexpensive oven controlled crystal oscillator can maintain timing for several days.**
- **Total additional cost is \$1000-\$2000 for 19 GHz synchronizing receiver.**